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13. ABSTRACT (Maximum 200 Words) The ARN AOPM Application System was developed to retrieve and process special measurement and stock orders for military clothing. AOPM was initially developed to replace the SF 358 and SF 1111, the special measurement forms used for male and female personnel. After completion of AOPM, ARN Partner Clemson Apparel Research (CAR), initiated the Electronic Order Form (EOF) Project. The purpose of the EOF Project was to place the special measurement ordering process on the DSCP Web site. The EOF program replaced the special measurement functionality in AOPM. Military locations requiring special measurement clothing now access EOF to submit their special measurement orders to DSCP. DSCP uses this special measurement order to initiate a formal EDI order to a specific Defense Apparel Manufacturer (DAM). The formal order, an EDI ANSI X12 4010 850 Purchase Order, is transmitted to the DAM. The DAM retrieves the EOF special measurements via FTP and the 850 Purchase Order via the Value Added Network (VAN). The DAM then launches an AOPM Requisition Number match routine. If there is a match between any Purchase Order and EOF special measurement data retrieved, the information is then "married" together for the DAM to use in initiating the manufacturing process.				
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DLA-ARN Short-Term Project Report

for

US Defense Logistics Agency

on

Apparel Research Network (ARN)
Apparel Order Processing Module (AOPM)
Interfaced With The
Electronic Order Form (EOF)
(AOPM/EOF)

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FINAL TECHNICAL REPORT

Apparel Research Network (ARN)

**Apparel Order Processing Module (AOPM)
Interfaced With The
Electronic Order Form (EOF)
(AOPM-EOF)**

Submitted To

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**April 29, 1999
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Executive Summary

The Apparel Research Network (ARN) Apparel Order Processing Module (AOPM) Application System was a Short Term Project (STP) at EDI Integration Corporation to develop a system to receive and process special measurement orders and stock orders for military clothing. AOPM was initially developed to replace the SF 358 and SF 1111, the special measurement forms used for male and female personnel. The system was successfully completed to perform these functions.

Soon after completion of AOPM another ARN Partner, Clemson Apparel Research (CAR), initiated the Electronic Order Form (EOF) Project. The purpose of the EOF Project was to place the special measurement ordering process on the DSCP Web site. This special measurement program replaced the special measurement functionality in AOPM.

Military locations requiring special measurement clothing now access the DSCP Web site, fill out the applicable forms and requirements and submit their special measurement order to DSCP. DSCP uses this special measurement order to initiate a formal EDI order to a specific Defense Apparel Manufacturer (DAM). The formal order, an ANSI X12 850 Purchase Order, is transmitted by EDI and notifies the DAM that there are special measurements that they must retrieve from the DSCP EOF Web site.

AOPM was modified to remove the extensive program coding and graphics dedicated to the special measurement order processing. AOPM and the EAGLE EDI translator were further modified to perform a File Transfer Program (FTP) routine on the Internet. With the FTP routine, the DAM, after receipt of the 850 Purchase Order, retrieves the applicable special measurements. AOPM joins the special measurements with the 850 Purchase Order for the DAM to use in initiating the manufacturing process.

Abbreviation / Symbol List

ARN	Apparel Research Network
DAM	Defense Apparel Manufacturer
DoD	Department of Defense
DSCP	Defense Supply Center Philadelphia (Clothing/Textile; Food/Subsistence; Medical)
AOPM	Apparel Order Processing Module
DFAS	Defense Finance and Accounting Service
OA	Ordering Activity
CIIP	Clothing Initial Issue Point
or	
RTC	Recruit Training Center
VAN	Value Added Network

(CIIP and RTC are used interchangeably)

1.0 Introduction.

EDI Integration Corporation (EIC), an ARN Partner, developed the Apparel Order Processing Module (AOPM). The system is multipurpose. It can be used as an electronic data interchange (EDI) front-end to legacy systems that belong to Defense Apparel Manufacturers (DAM) or any other entity that needs EDI for exchange of purchasing transactions with the Defense Supply Center Philadelphia (DSCP). It can also be used as a stand-alone system where a legacy system is not available or is not capable of importing and exporting business transactions. In either instance AOPM is composed of an EDI translator, application software to manage the business transactions, and a database to maintain the status of inbound and outbound transactions and to create turnaround transactions. AOPM data once converted to EDI X12 by the EDI Translator, is communicated to a value-added network (VAN), but can be tailored to communicate using the Internet.

In instances where the DAM has a legacy system, the transaction data exchanged between DSCP and the DAM will be data mapped to the version of ANSI X12 that is specified by DSCP. This ensures that the data definitions and formatting are compatible between the trading partners. The transactions are received from DSCP by EAGLE™, the EDI translator from EDI Integration Corporation, which is integrated with the AOPM application software. The next step is to develop a program interface for each transaction, purchase order, ship notice or invoice, used by the DAM and DSCP. The program interface is necessary for the crosswalk of data to and from the record layouts of the DAM's internal legacy system.

When the DAM does not have a legacy system and needs an application for receipt, review, storage, and turnaround response to a DSCP transaction, AOPM has been programmed to be a standalone application. Again data mapping ensures that the data definitions and formatting are compatible between the trading partners. There is no need for a program interface for each transaction, since there is no legacy system to import and export data with.

2.0 System Modification.

2.1 *Receive DSCP Orders.*

The special measurement software representing the procedures and graphics of the SF 358 and SF 1111 for male and female military personnel were stripped from the AOPM. Extensive work was done to remove this unneeded coding and to streamline the AOPM operation. AOPM supports the ANSI X12 EDI transaction sets that are used by DSCP and DFAS. A transaction scenario between a DAM and DSCP is shown here for information purposes:

- 850 Purchase Order (from DSCP to the DAM)
- 855 Purchase Order Acknowledgment (turnaround transaction from the DAM to DSCP)
- 860 Purchase Order Change (from DSCP to the DAM)
- 865 Purchase Order Change Acknowledgment (turnaround transaction from the DAM to DSCP)
- 856 Advance Ship Notice (turnaround transaction - DD250 - from the DAM to DSCP and/or shipping destination, and DCMC if required for contract administration purposes)
- 810 Invoice (turnaround transaction from the DAM to DFAS or DSCP)
- 820 Remittance Advice (from DFAS to the DAM)

The capability exists in AOPM to receive and store inbound transactions like the 850 Purchase Order. From this transaction the DAM user can, with minimal input, create a turnaround transaction like the 855 Purchase Order Acknowledgment, the 856 Advance Ship Notice (DD250), and the 810 Invoice to their trading partner.

- 2.2 FTP for Special Measurements. Changes were made to the AOPM/EAGLE EDI translator environment during this STP to allow the DAM user to retrieve, compare and “marry” File Transfer Program (FTP) special measurement files to an inbound EDI 850 Purchase Order according to Requisition Number. These special measurement files are placed on the Web Site by RTCs and other military organizations.

3.0 Methodology

- 3.1 Assessing Technology. An assessment of the enabling technology that was available to support preparation and transparent transfer of transactions was made.
- 3.1.1 Internet. EOF is a facility on the Internet for military organizations to use to place Special Measurement Orders (and Stock Orders) for military clothing. The use of this technology by CAR in the development and implementation of EOF required EDI Integration Corp. to investigate the requirement and to judge the technology upgrade needed for AOPM to be compatible and to retrieve special measurements from the Internet.

3.1.2 **Electronic Data Interchange (EDI).** EDI encompasses the ANSI X12 EDI Standards, EDI Translator Software, and Value Added Networks (VANs) or the Internet. Together they permit the transparent exchange of processable data between computers, databases and applications at dispersed locations. VANs and the Internet were chosen by ARN as the primary methods of communication, due to the availability of these connections at many of the DAM sites.

3.2 **Requirements Analysis.** The requirements for linking AOPM and EOF were analyzed and available technology was reviewed prior to the development and implementation. The requirement was that the ordering points (CIIPs, RTCs, ROTC) prepare Measurement and Profile information and create a special measurement order in EOF on the DSCP web site. This requirement was followed by DPSC preparing a Purchase Order, which was data mapped to the ANSI X12 850 Purchase Order format and transmitted to the DAM. Once the DAM has received the 850 Purchase Order, it must obtain the special measurements for the particular order. This required a link to the Internet. The following sites were analyzed or consulted during the development and implementation of AOPM-EOF interface:

- Clemson Apparel Research (CAR) Demo Site
- Cal Poly Demo Site
- Maryland Clothing Manufacturing, Inc. Baltimore, MD

3.3 **Systems Development and Integration.** The AOPM application software was developed in the Microsoft FoxPro data base language. The application software was integrated with the data mapping of the ANSI X12 transaction sets listed above, and with the EAGLE EDI translator. The EAGLE EDI translator contains all the ANSI X12 EDI transaction sets and the communications external reference (EXREF) for the Internet and for VANs. The FTP Process provided for is compatible with any of the Internet Service Providers (ISP) that DAMs might subscribe to for service.

3.4 **Implementation.** The AOPM application software was implemented at Maryland Clothing and Cal Poly. This included the EAGLE 4.0 EDI Translator from EDI Integration Corp. and FTP software from WS_FTP Pro with a "live" Internet Connection (AOL or other).

4.0 Procedures

4.1 **Data Retrieval.** There is no specific order for transferring the Purchase Order and the Special Measurement Data. The DAM user may retrieve the Purchase Order first, and would do the following:

- 4.1.1 Access the EDI Translator and dial out to their Value Added Network Mailbox and retrieve any inbound 850 Purchase Orders that have been sent by DSCP. This information would be interpreted from the ANSI X12 EDI Standard and then uploaded into the AOPM application automatically.
- 4.1.2 When the 850 Purchase Order is in place, the DAM accesses their "live" Internet connection (Maryland Clothing Manufacturing (MDCM) uses America On Line). When this connection has been established, the Special Measurement Information is transferred from the DSCP Web Site (initially from the CAR developmental web site) via the FTP software. The FTP software displays for the user the computer's hard drive and the DSCP Web Site in a split screen format. For MDCM-ARN, the party identifier code for Maryland Clothing, the left side of the split screen is their home directory. It is the C:\EAGLEW\EOF_IN directory. The right side is the DSCP Web Site. The MDCM-ARN user drags the special measurement files from the DSCP Web Site to the home directory so AOPM can access them. The user then closes the FTP Program and closes out their Internet connection with AOL.
- 4.2 Processing. Both the EOF Special Measurement data and the applicable 850 Purchase Order data are now resident in the MDCM-ARN computer. The next step is to link the data and transfer it to the manufacturing process.
- 4.2.1 The user re-opens the Eagle Translator, and opens the AOPM Application. In AOPM there is a menu option called, "Process". Within that drop down menu, there is an option for "Import EOF Data." Choosing this option will "MARRY" the EOF and X12 850 Purchase Order data together into the AOPM Screen according to matching Requisition Numbers (if there is a match). The user then enters the AOPM Screen where there are several screens to view either the Purchase Order (by itself), the EOF Special Measurement data (by itself), or the Special Measurement and Purchase Order information together (which can be printed out).
- 4.2.2 The Purchase Order and the Special Measurement data are now linked in the AOPM databases. The data can now be interfaced to internal system, at the users option, by preparing a datamap of the data, and moving the data to the internal system files by interface programming.
- 5.0 Results
- 5.1 AOPM. The Apparel Order Processing Screen is the main transaction entry and review screen in AOPM. It is designed to perform many different functions, and the use of these functions varies depending upon the location at which AOPM is installed. The possible functions include: creation of outbound transactions, such as Purchase Orders (X12 850), Purchase Order Acknowledgments (855), Advance Ship Notices (ASN) (856), and Invoices (810). Additional functions include: receipt and review of inbound transactions, including Purchase Orders (850),

Purchase Order Acknowledgments (855), Purchase Order Changes (860), Advance Ship Notices (ASN) (856), and Invoices (810).

- 5.1.1 Turnaround Transactions. All needed data entered into an original Purchase Order is returned automatically in subsequent (related) documents when the P.O. is responded to by another AOPM system. Thus the relevant data is carried throughout the transaction cycle, from Purchase Order to Invoice. A turnaround transaction is an outbound transaction that uses data from an incoming transaction to populate some of its fields. AOPM provides a method for automatically generating the major portion of each turnaround transaction.
- 5.1.2 AOPM-EOF. The modification of AOPM links AOPM with the Electronic Order Form (EOF) process. With AOPM-EOF the DAM has one facility for EDI and for EOF Special Measurements. It provides the DAM with the capability of retrieving Special Measurement data from the DSCP Web site, marrying it with the ANSI X12 850 Purchase Order received through EDI, and interfacing it directly into its production system.

6.0 Conclusion

AOPM-EOF is an inexpensive and effective system for the receipt and processing EDI transactions, EOF Special Measurements, and stock orders, and the creation of follow-on documents between DSCP and the DAMs, using EDI, VANs and the Internet.